EMCal Electronics Assembly and Testing

2/27/2017

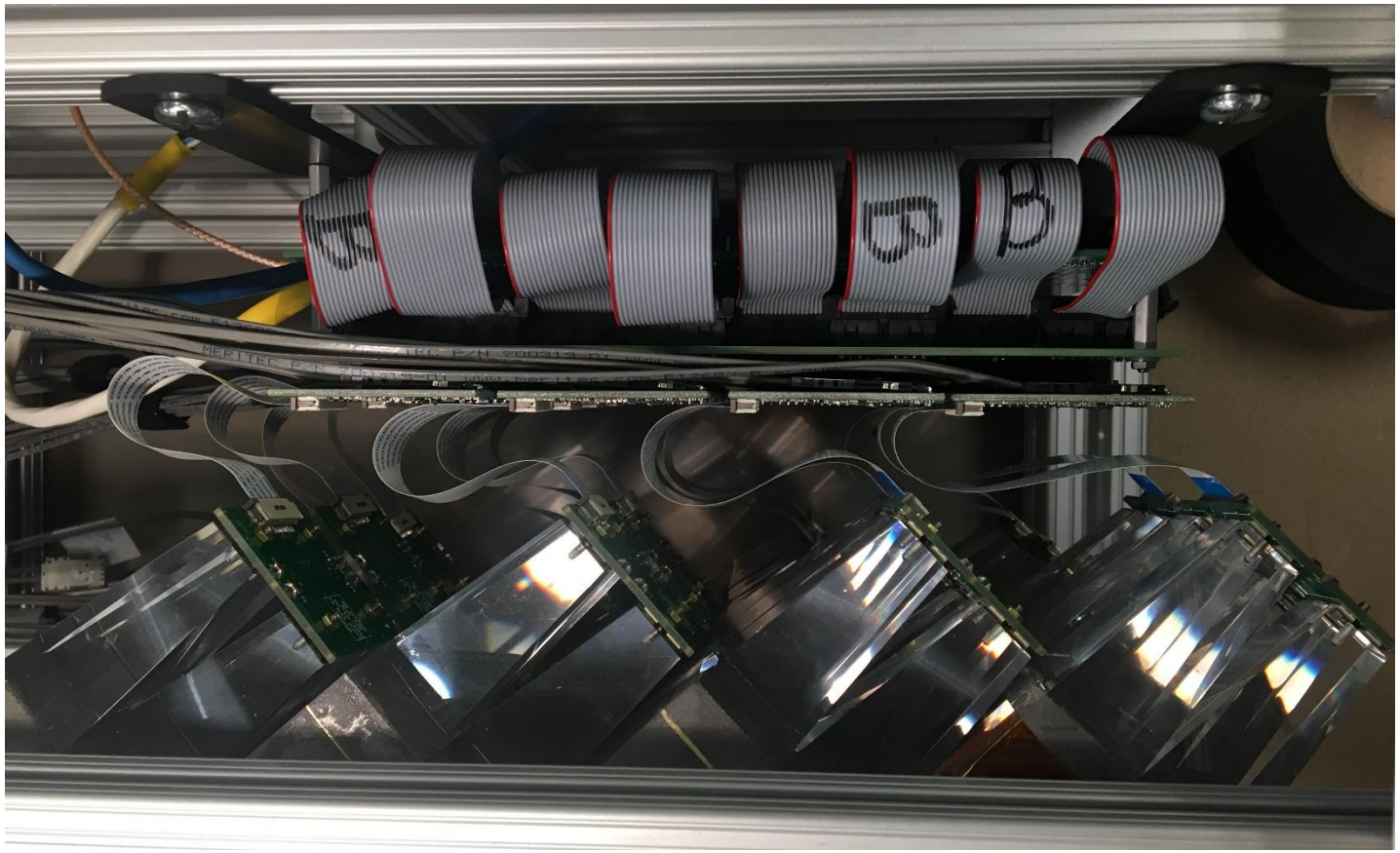
EMC Electronics Testing Tasks

1. Sort sipms by manufacturer test data (gain, Vop)
2. Characterize gain curves of all or a subset
3. Check daughterboards (dbs) for shorts, faults (6144) before installing sipms.
4. Once sipms are soldered on, - test all 16 sipms working? LED working?
5. Pre-assemble packages of 4 dbs + interface board (384) - test functionality of preamp boards, interface board
6. Test each sector with installed, cabled electronics before installation into sPHENIX (64) – test sector functionality, LED signals, cosmics, temperature readout
7. Close up

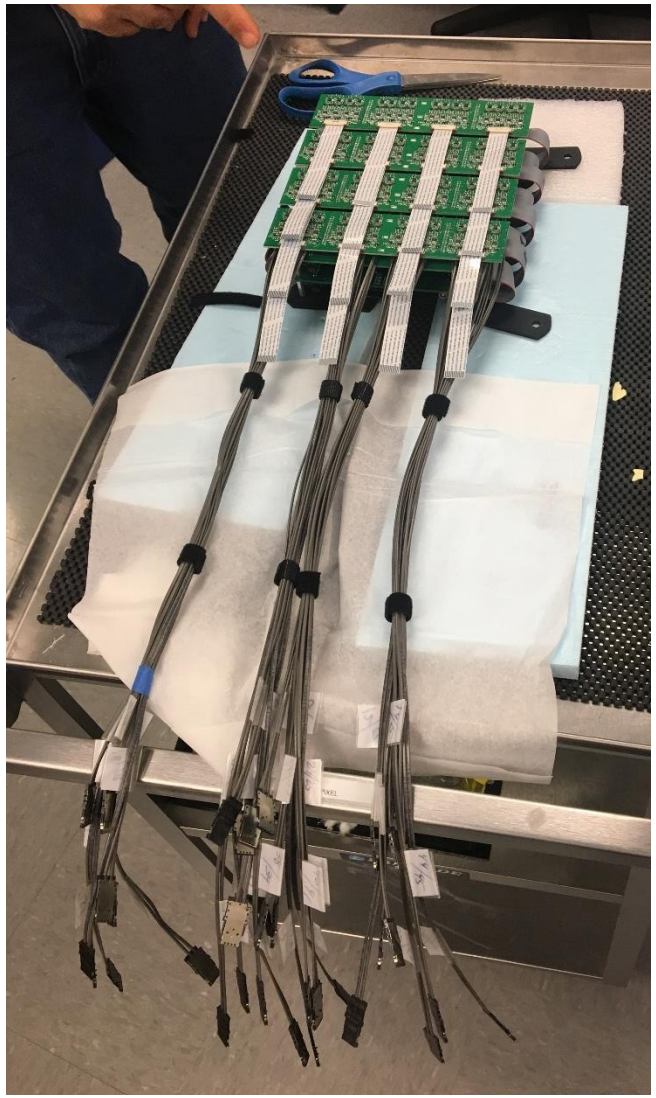
FOR EMC3 prototype:

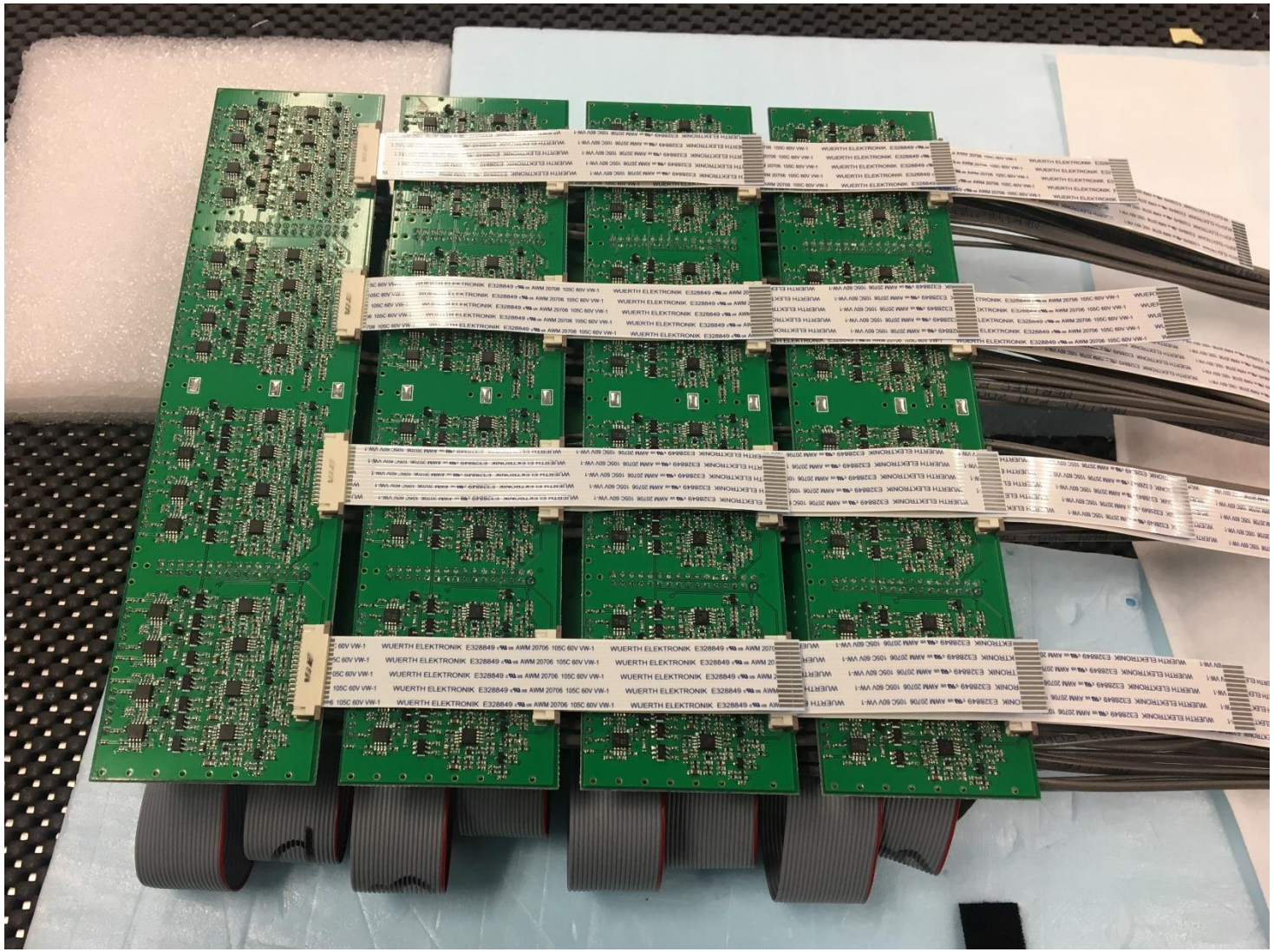
1. Pre-assemble and cable electronics package
2. Pre-Position package, attach cables to daughterboards
3. Mount electronics in final position

Does this installation/cable routing work with 6 packages?



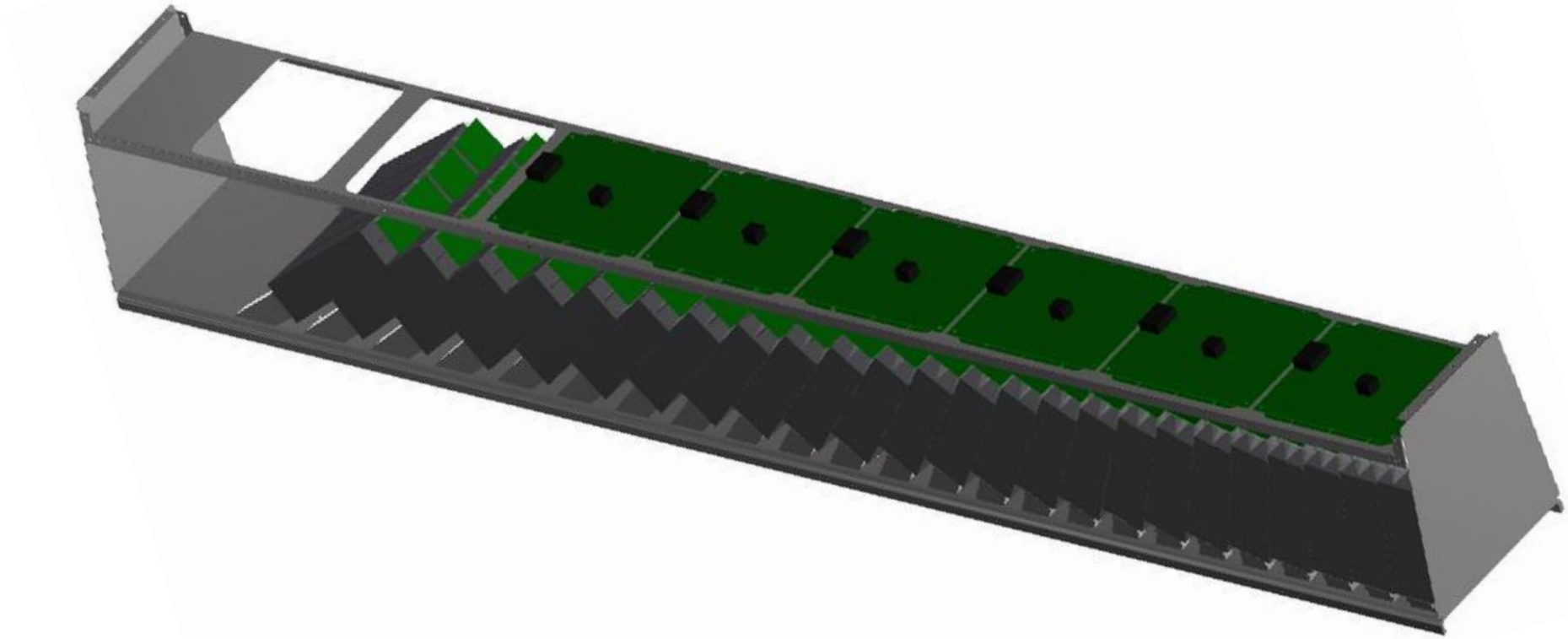
Supermodule electronics package from EMC3 prototype - 6 per sector

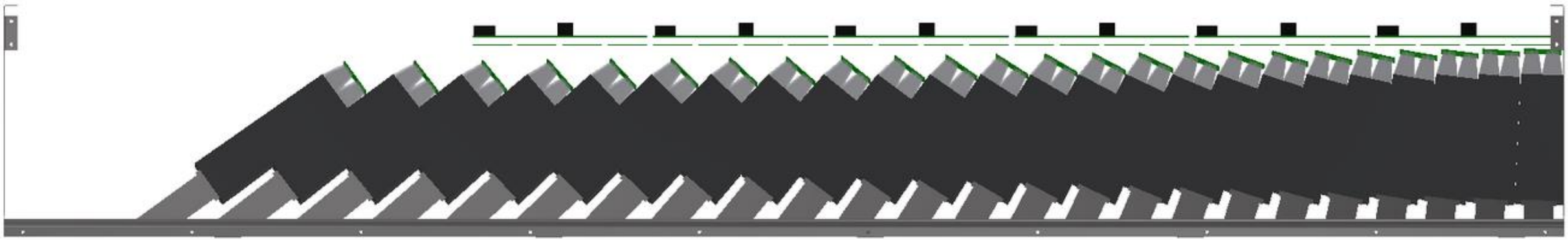




EMC Sector Assembly – electronics installation

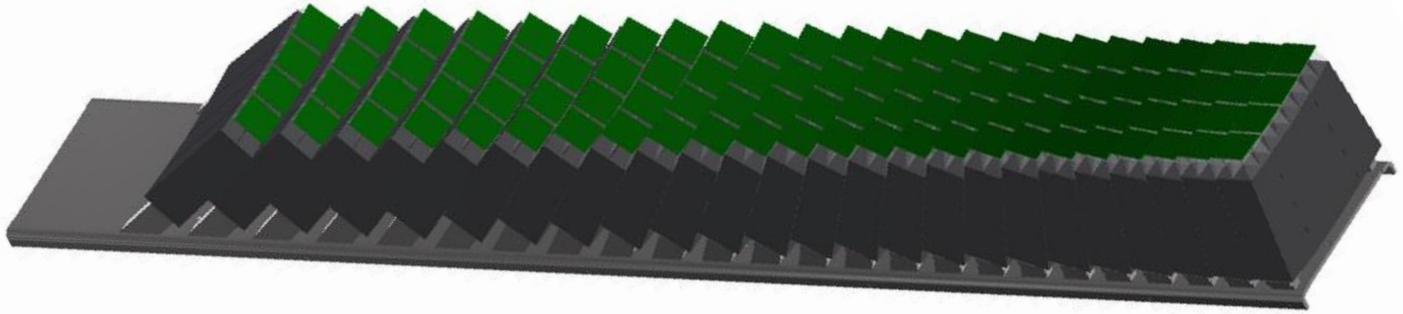
1. Solder 16 sipms onto each daughterboard (db) - test all sipms working? LED, thermistor working?
2. Attach (optically couple) dbs to blocks (x96)
3. Install blocks (or modules of 4 blocks) into backplane from 1 to 24
4. Pre-assemble packages of 4 dbs + interface board - test functionality of preamp boards, interface board
5. Dis-assemble package, cable preamp boards to dbs (x4x6) from 1 to 24
6. mechanically mount preamp boards to box/frame – use interface brd template to position grps of 4 preamp brds
7. Install data cables across backs of preamp boards – from 1 to 24
8. Connect cooling from 1 to 24
9. Install interface boards from 1 to 6 – test sector functionality, LED signals,
10. Close up





Pre-production Prototype electronics:

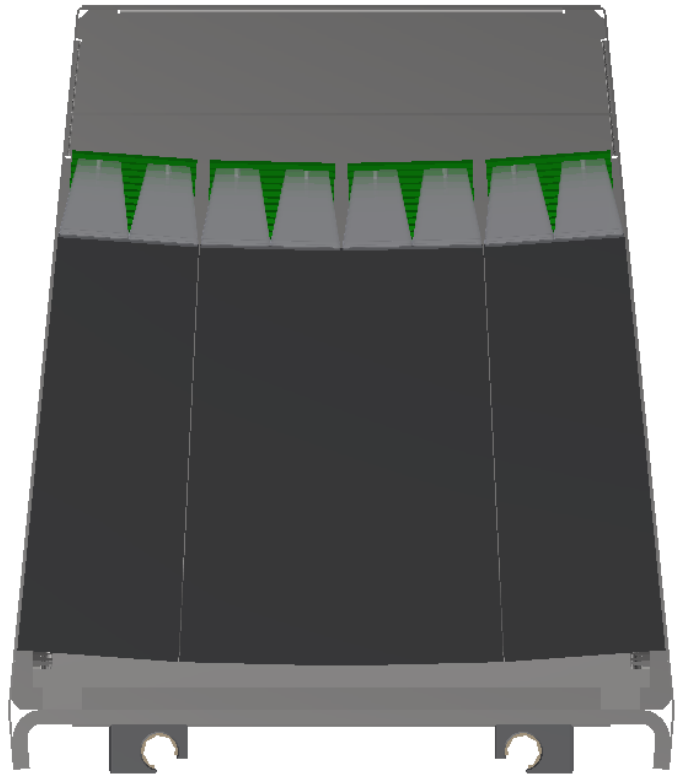
- 96 daughterboards (4x24 types?) with sipms installed
- 24 preamp boards
- 6 interface boards
- 96 flex-ribbon cables
- 192 signal cables
- 24 Cooling staves



- Delivery schedule for sipms is …….. 200 April 1, 1500 Aug 1
- Install sipm/dbs onto blocks from …… Nov 27 – Jan 29 (40 days)
- Install blocks into sector …… Dec 4 - Feb 7
- Install electronics (preamps & controller boards) …… Feb 8 – Feb 12

Full production electronics:

- 6144 daughterboards (256 x 24 types?) with sipms installed
- 1536 preamp boards
- 384 interface boards
- 6144 flex-ribbon cables
- 12288 signal cables
- 1536 Cooling staves



- Delivery schedule for sipms is …… By Jan 2019?
- Install sipm/dbs onto blocks from …… 3/25/2019 – 10/2/2019
- Install blocks into sector ……4/1/2019 – 10/9/2019
- Install electronics (preamps & controller boards) ……. 4/19/2019 – 10/9/2020
- Test finished sectors……..4/22/2019 – 10/30/2020
- Install finished sectors into sPhenix…… 11/4/2020